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GARDEN BULBS - ALL KINDS

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SPECIES & VARIETIES

GARDENER'S SUPPLIES

PIONEER SEED COMPANY

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Monthly — Number 49-7

In The Mail

A new year has come around but the same old problems are still with us; help shortage being our biggest problem. Ordinarily one can hire help for the ordinary work but in our particular field it is almost necessary to have trained employees and how few want to be trained now-a-days. It is much like calling your employment bureau to send up a man to "go over your rock garden" for you.

However, there are a great many bright things ahead for the next 12 months. One is that the Catalog will have some very valuable articles during the year, both on cultural matters and on hybridizing which will be in one of the Spring issues; Dr. Worth on a new method of growing lilies from seed and, too, the new Orchid Culture method, of which much will be written as it works itself out.

During the past summer, we sold a great amount of Iris. And in a letter from Walter Welch, who, as you might know, is a specialist in Iris hybridizing, writes that "such varieties as Great Lakes, Gudrun, Prince of Orange, Christabel, Easter Morn, Gay Hussar, City of Lincoln, California Gold, E. B. Williamson, Elmohr, Gloriole, Treasure Island, Wabash, Matterhorn, Sable Snoqualmie, Grand Canyon, Los Angeles, Jean Cayeux, Missouri, Ming Yellow, Amigo, Radiant, Snow Flurry, The Admiral, The Red Douglas are among the finest and will remain so for years to come, each has quality." Only three in this list are lacking in our offerings this summer and all were planted in our own nursery too. Mr. Welch also goes on to say that seed from the different species (which make up the bulk of our Iris offerings in seeds) usually come true from seed, while crosses of varieties and of species, too, do not come true and one planting these should not expect new varieties. Most of the seed of the different species of Iris, we have obtained from English specialists who have been willing to exchange only.

Stanley L. Pytel of Cicero, Ill., wrote recently that his Hardy Chrysanthemums seed be purchased this spring, produced fine sturdy plants followed by a variety of blossoms in some lovely shades. We intend planting several thousand Chrysanthemum plants this year ourselves, all grown from seed. Mr. Pytel also added that the Dahlias grown from seed produced lovely flowers and very nice tubers. So many customers write us about growing Dahlias from seed and all seem to be more interested in this method than in growing them from tubers, which is more expensive but lacks the added interest of seeing the different kinds that come from a pocket of seed.

We get in every mail kind letters regarding our Catalog and to mention one and miss a great many, is a difficult matter for the writer. However, Mr. James Ball of Milwaukee, writes and because his letter is rather "double-barreled", in that he gives both the Catalog and Florence Levy praise, we are going to give it rather fully. He writes "Received the Nov. issue a few days ago. I think it is one of the most complete of all seed catalogs I receive. In addition to the wide selection of seeds offered, the helpful articles in each issue on various gardening subjects, are a very great help to all flower lovers. The article entitled "Methods of

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A Silvery Alpine For Shady Places

Of the dwarfier Achilleas or Milfoils, there are a number of very beautiful little plants adaptable for the front of the border or for the rock garden. They are all of easy culture but generally have a preference for rather dry and peaty soils with some sand about it.

Some are pleasing throughout the greater part of the year, with their silvery foliage, and still more ornamental with their pretty white flowers, freely produced by the greater number of the species.

Achillea argentea is a good representative of these silvery leaved species. It is easily grown and does not suffer much from heavy rains. It is of a rather trailing habit of growth—to 6-9 inches high, blooms freely throughout the summer and autumn.

Seeds From Columbia

The following seeds from Colombia will be ready during the winter months. Those wishing seeds of these, should place their order now for delivery as the seeds arrive here. This will allow us to mail them as fresh as possible and promptly when in stock. All packets are 50c. Added to this list should be some 200 of the very finest species of Orchids, but these will be listed in the regular Orchid listing later. If you should wish any special South American Orchids, kindly advise us and we will try to furnish you seed.

BOMAREA — Andean species mixed.

BROMELIACEAS — Colombian species mixed.

BEGONIA — ferruginea.

BEGONIA — Rex, an especially fine blend from an extra good collection.

BEGONIA — Many Andean species mixed.

BOCCONIA — frutescens.

ANTHURUM — foliage species mixed.

CALCEOLARIA — Colombian species mixed.

CYPHOMANDRA — betaca.

CARICA — papaya.

CARICA cundinamarcaensis, the best papaya for ornamental foliage.

DATURA arborescens.

CENTROPAGON psittaciformis.

FUCHSIA — Andean species mixed.

NERTEA depressa.

LISIANTHUS glaber.

LANTANA — South American species, mixed.

GESNERIACEAS — Andean species mixed; many have written for seeds of this family and these should be good.

FERN — Tree Ferns from Colombia, mixed.

FERN — Colombian ferns, very fine mixed.

ISOLOMA hirsuta.

SOLANUM galeatum.

TECOMA stars.

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The Blue Woodruff

Asperula azurea setosa is a species with pale blue flowers, a most charming plant well adapted for the mixed border.

It is quite hardy, 9-12 inches high, lasts a long time in flower and at home in most any soil or location.

Its color is of exceptional merit as is also its habit of growth.

ORCHID CULTURES

New Service in Orchid Germination

When the word "Orchids" is used, one immediately thinks of the expensive Cattleyas and the special Orchid greenhouses of the wealthy. This is not the case here for there are many Orchids that now can be grown by our readers, where in the past this was not possible mainly due to the difficulty of planting the seed for it requires around a year to germinate, besides being rather a difficult one to handle.

In the South and on the West Coast a great many gardeners enjoy Orchids in their lath houses—they nearly all require shade—and in the North there are many kinds that can be grown in greenhouses as well as many real hardy types that grow outdoors in the North. The common Lady Slipper is scarce due mainly to the difficulty of its getting started under the conditions it has to stand and even when it does get a foothold, it is soon dug up by some "flower lover."

So far as we are aware, we are the only firm undertaking this work, especially on a scale that will furnish seedlings to the average grower and in the species and varieties that he can grow, as well, too, at a price that one can afford to pay. This is a new and there still are many problems to be solved but we feel sure that we can now go ahead and offer seedlings of many different Orchids, and list below those that are now planted and in each following issue others will be added.

As explained in a former issue, the seeds are planted in test tubes under laboratory conditions in a sterile agar containing sufficient plant food and moisture to last a year. We hold these cultures for 3-4 months as a rule, until the plants are green and they can be shipped to the purchaser, who keeps it at room temperature and where its development can be seen until ready to transplanting to their permanent location. Each tube should contain 50-100 plants under ordinary conditions.

We will be pleased to start cultures for our customers from their own seeds, making shipments in 3-4 months time or as soon as the

leaves are green and the cultures advanced enough to stand a change in location. The charge for this is the same as for our own stocks.

Directions for growing, etc., will be fully covered in these columns each issue; we will also give space to different species suitable for the ordinary grower, their culture and other information of interest.

The price of the cultures will be \$3.00 each, for the present, not prepaid; express is the best method and the cost per shipment will not be over \$1.00 to the West Coast; several cultures can be included in one shipment. Air express to foreign countries. We will be pleased to give definite information in special cases.

The following Orchids are now in germinating tubes and outside of any possible mishap, they will be ready to be shipped about April.

CYPRIPEDIUM cordigerum Lady Slipper. Hardy N. Am. species.

COELOGYNE barbata. White with brownish-lined lip, Himalayas, Oct.-Feb.

DENDROBIUM Formosum. Snow white, center lip orange yellow, Himalayas, Jan.-May.

DENDROBIUM pierardii. Pale rose, lip whitish yellow, carmine or purplish lines at base, (Continued on Page 22)

Christmas Rose

Helleborus, which includes the so-called Christmas and Lenten Roses, are not related to the rose at all, but are members of the Buttercup family, with glossy much cut leaves and large cup—or saucer-shaped flowers at most unusual seasons. The Christmas Roses often start blooming in very late fall, and if protected by a box with glass over the top, will continue throughout the winter. Then the Lenten roses, in somber and weird shades of purple and rose, brown and greenish, take over for several weeks more.

A planting of these in some fairly sheltered spot, under deciduous trees or shrubs which will give summer shade and winter sun, is something that most gardeners covet. But plants are expensive and rather scarce, so that one must usually be content with only one or two.

They may be raised from seed with a little patience. If the seed can be sown fresh in an open ground bed in late fall or early winter, the seeds will germinate freely with the first spring thaw, and grow on unharmed by later bad weather. Seed obtained now should if possible be sown in flats or tin cans and set outside to take all the bad weather the winter can provide. If the seeds fail to come up as scheduled, be patient and leave the bed undisturbed till next spring, when there will almost certainly be a stand of husky little plants. These grow rapidly, for one of the buttercup relations, and should make flowering plants in about three years.

In addition to the species mentioned, Helleborus orientalis and Helleborus viridis, there are rare green forms that are equally easy in growth, among them H. olympicus and H. corsicus.

A Letter From South Rhodesia

I want to send you a big thank you for the copies of your monthly Flower Seed Catalog which arrives safely over here; your publication is certainly something new in catalogs and each number is so new, instructive and friendly and much more a horticultural magazine than a catalog and I have learnt quite a lot already about your wonderful native plants. Your huge list of Penstemons was certainly an eye-opener to me. During the war I entertained a number of your service men and women and one of these chaps, last year, sent me 20 packets of your seeds as a gift, that is how we got acquainted.

It is early spring here now (Sept. 23rd), altho in this climate we are able to garden and sow seeds the whole year round. Daffodils have been in bloom for some weeks now and I have some thousands of them scattered about my garden, many other bulbs too. Camellias have been in bloom in the open garden all winter. Soon the Azaleas and Rhododendrons will be taking their places. I grow

(Continued on Page 21)

12 Issues
For \$1.00

In every mail we have requests for Catalogues from people who mention their seed purchases do not warrant a regular Catalogue and who wish to pay a subscription price, that they may have each issue regularly. We have put this matter off from issue to issue until at this time, there are several thousand such requests on our mailing list. We would like nothing better than to send copies regularly but the expense problem is making it impossible.

This month the postage jumps 50%, in fact each month nearly every item increases in some way and to overcome this problem and to be able to send copies regularly to all inquiries, we will make a nominal charge of \$1.00 for 12 issues. We will have many interesting articles during the next 12 issues, that will be worth many times the cost; each issue will contain condensed reading matter as in the past—no "blown-up" articles, but all information and in a practical way, by practical growers. We are having many drawings made of rare flowers which will be used in future issues and

(Continued on Page 22)

American Cowslip

Probably not many of our readers are acquainted with this beautiful flower, Dodecatheon integrifolium, also called Shooting Stars.

It is, perhaps, the neatest of the American Cowslips. Their relationship to the Cyclamen is apparent by the reflexed petals which turn back on themselves in that pretty way which makes the Cyclamen such favorites with the flower growers.

This grows some 6 inches high, has oval leaves and umbels of flowers on a neat stem. The color is a beautiful deep crimson or rosy-crimson with a white ring at the base of each petal and a yellow cup. It is found in shady, rather moist woods.

It makes a dandy rock or garden plant for such locations.

Dwarf Bearded Iris

I believe that the breeding of Dwarf Bearded Iris offers the greatest opportunity for results, of any perennial flower that we have today.

The Tall Bearded Iris has reached a high standard of perfection within the past few years, but the little fellows are still in a state of relative obscurity when compared to them.

Since the time of Caparne, who was probably the first to hybridize them seriously, there has been very little work done with the Dwarfs. A few breeders have put out some varieties as a sort of side line but a serious attempt to improve them is not very evident.

Until very recently all of the breeders have used the species *chamaeiris* almost entirely in their work, as evidenced by the fact that at least 90% of our present varieties are merely different forms of this species.

The Sass Bros., who gave us most of the best of our modern varieties used old Socrates and its seedlings, as did Burchfield, and Fryer and a few others. The result is that the color range is restricted to almost purple and pale yellows; they have numerous faults such as tucked under falls, narrow hafts, poor substance, they are not early enough and they are a little too tall and large for a Dwarf.

The Tall Bearded were in just such a state of undevelopment years ago, until someone began to introduce the blood of other species and from that time on the Talls began to make strides.

The answer to the Dwarf problem is exactly that and a few breeders are now beginning to show us glimpses of what we can expect in the near future.

The species *pumila* seems to be the logical plant to use for the foundation work in developing the Dwarfs. It has many characteristics which approach the ideal standard.

A Dwarf should be dwarf, it should be hardy, it should be early, it should have a flower in proportion to the plant, with a neat slim stem, with one terminal bud to the stem, devoid of branching and with the bloom form, substance and texture of the quality comparable with the Tall Bearded.

Pumila will give us the most important of these qualifications. It is the earliest of all, blooming sometimes the latter part of March and always by the early part of April. I sometimes think that is the most important characteristic of the Dwarfs, the main reason for their existence. *Pumila* is extra hardy, always getting caught by snows and freezes and still giving us a grand display of flowers. It is only about four to six inches in height, with a neat stem, one terminal bud, and adds new colors to our very restricted range. *Pumila* will throw some blues and near whites. At present our only blues are *Coerulea* and *Azurea* and both are *pumila* hybrids. *Coerulea* is infertile but *Azurea* will occasionally form seed.

This matter of hybrid infertility is the main reason for the fact that most of our Dwarfs are from *chamaeiris*. The seedlings from one species will breed among themselves but when you cross with another species they bring hybrids, with an entirely different genetic constitution, you will find that most of them will be infertile. However if a large number of seedlings are grown, a few will be found that will set seed and have good pollen. By using these fertile seedlings, you will find that fertility will improve in the next generation, and once this infertility barrier is passed, you can go on with your work.

I will not take the space here to explain the reason for such action but I wish to emphasize the importance of carrying your breeding on to at least the second generation, if you wish to get the best from your crosses, especially when using hybrids between the species.

To be brief, only the dominant characteristics will show up in the first generation, but by crossing sister seedlings among themselves, this next generation will give every possible combination of the various characteristics from both parents, if grown in large quantities.

The next most important species

for Dwarf work is *arenaria*. This is a very diminutive species, only four inches high when well grown and usually only three under normal conditions. It has grassy foliage, a stem with two terminal buds, not branches, a flower of rich yellow, with wide horizontal falls of heavy substance, slightly ruffled, and with open standards.

This species is important because it has horizontal falls with wide petals, which none of the other Dwarfs have, most of the others having tucked under falls, a bad fall. This character is dominant and all of the first generation seedlings will have horizontal falls. But they will also have open standards, another fault.

Pumila has tucked falls and closed domed standards. In other words one species is good or strong where the other is bad. This makes an ideal cross for that reason. By crossing *pumila* x *arenaria*, then crossing these seedlings with each other, making the second generation, the resultant seedlings should give some with the good characteristics of both parents. That is, there should be some with closed standards and horizontal falls in the same plant.

Arenaria also given us some new colors. Although it is yellow, it throws some pinks and reds, though not pure, they will need further development. None of the other species has given reds or pink.

Both Paul Cook and Mr. Hill have done some work with *arenaria* and have given us such varieties as Tampa, the reddest Dwarf and Keepsake a yellow with horizontal falls, and Mist O Pink, Tiny Treasure, Cream Tart, a pink No. 4300 from Cook that will surely give you the urge to try this species.

Another species that has particular possibilities for new patterns in the Dwarfs as well as new colors, is *mellita*. This species has sickle shaped leaves, but this character is not dominant and its seedlings will show none, all having the type of the other parent.

There is another form of *mellita* called *Rubro-marginata*, which has the leaves edged with red, from which it gets its name. The flowers of these two forms are different, *mellita* being a sort of cream amoena; the standards being light ivory and the falls darker with a buffish cast and with a border the color of the standards, and a large fuzzy white beard. *Rubro-marginata* is a smoky red color, the falls blended with blue, purple and red, giving a very colorful appearance. The beard is brilliant dark purple.

Aside from this both have some bad faults. The bloom shape is not too good, the standards going straight up, and too large for the falls, and the falls recurve badly. The texture looks thin and transparent but in spite of their appearance the blooms take the weather and stand up well.

Whites in the Dwarfs are scarce and of poor quality, most of them being disfigured with purple blotches and striations and all having an admixture of yellow, giving them a greenish cast. Here should be a worthy project for your consideration.

In breeding for whites, it seems that blues have a tendency of bleaching out the yellow color, eliminating the purple anthocyanin. By using a blue form of *pumila* or the *pumila* hybrid *Azurea* and crossing onto one of the near whites such as *Bride* or *Little Elsa*, one should get much improve in both blues and whites. Then in the next generation cross whites with white and blue with blue and select for color, regardless of other qualities.

To accomplish the greatest improvement one should breed for one thing at a time. If you are breeding for color select the best color and forget the other qualities, these can be later taken care of by further crosses for those characteristics. One should be carrying along a line for bloom form, another for color and others for other qualities; then when improvement in any one line is satisfactory, it should be crossed with plants from the other lines and carried to the second generation.

Those familiar with the Tall Bearded will know that they can get almost the complete range of characteristics in the first generation. This is due to the fact that

their blood has become so mixed that all are more or less related. Not so with the Dwarfs, because you are working with or near the species and the blood is more pure and therefore the chromosomal difference is greater.

To get back to *mellita*, its seedlings give a wide range of colors and patterns and seem to be influenced strongly by the particular parent used with it. A cross of *Fragrance* x *mellita* gave several good purplish blues, good selfs, and one all white, even to the beard, with no markings of any other color; but all had the flower shape and texture of *mellita*.

In another cross of *Tony* x *mellita* came a good near amoena, the standards almost white and the falls purple, with border the color of the standards. From this cross should come probably both variegatas and amoenas as both are closely related.

Genetical theory tells us that it makes no difference which plant is used for the seed or pod parent, the reciprocal cross giving the same results as the other. This applies to plants with the same chromosomal number. However when working with plants with different numbers there may be a difference, and as these species all have different counts I would advise that the reciprocal cross be also made to get the full gametic range of characters.

Pollinating Dwarfs is so easy and simple that it may be useless for me to describe the mechanical processes necessary, but for the benefit of the beginner, I will briefly describe my method.

Looking down into the throat of the flower you will see a small stem like filament coming up from the base of the throat, with a small pollen sack on the end. This is the stamen and the male parent. Directly above, overhanging and protruding outward is the crest, with two sort of flags sticking up. Attached to the under side of the crest is a sort of shelf which can be exposed by lifting up the crest, separating it; this little shelf is the stigma or female organ.

Take a pair of blunt tweezers such as jewelers use for picking up small screws and reach down into the throat and break off the stamen of the flower you want to use as the male or pollen parent. Look to see if it has pollen, as some varieties do not have one; you can see it very readily. Carry this stamen over to the flower you want to use as the seed parent, with the left hand fingers take hold of the crest flags and lift it up exposing the surface of the stigma. Look to see that a bee has not already deposited some pollen, then if clean, still holding the stamen in the tweezers, wipe the pollen sack across the stigmatic surface and the job is done. It is not necessary to pollinate more than one stigma, but look to see that the other two are clean. Also it is not necessary to bag or cover the bloom after pollinating as the pollen takes hold very soon.

Always keep exact records of your crosses, all the way through until they bloom. Get some string tags at your drugstore and mark the number or name of the pollen parent on it, then attach it to the mother plant just below the bloom. Without records you can get nowhere.

The best time to pollinate is about 9 o'clock in the morning of a clear day, you can tell easily when the pollen is dry enough to wipe off. Though any time of day will usually take if the weather is dry. Pollen can be saved for up to six weeks by placing the stamens in a dry place, and kept for the time when some other variety blooms.

After pollinating the seed pod will soon begin enlarging and sometime around August 1st will dry up and begin to split open. Put in a bag, marking the cross on the bag. Plant outdoors in Sept. or early Oct. and they will germinate in early spring. As soon as they are about an inch or more high transplant out into their permanent places, I like to transplant them during May, as by doing so I am assured that all will bloom the following spring. In other words you can expect bloom the second spring from the time you pollinate.

If you have not grown seedlings from these Dwarf species you are missing an opportunity for the greatest thrill that gardening can give. It is a hobby that enlarges

Seeds From Jack Drake

During the past two seasons, a few fortunate American growers have had *Primulas* from the seed produced in the Scottish nursery of Jack Drake. These seeds, even of usually difficult species, have literally germinated like cress, and this has led to many requests for more seeds from the same source.

It is with pleasure that we have been advised of the shipment of the following kinds from the 1948 crop:

Primula chionantha, a lovely white.

P. burmanica, purple candelabra type.

P. pulverulenta, crimson candelabra.

P. secundiflora, drooping wine-red bells.

P. candelabra hybrids, an unusually fine and vigorous strain, easy and in a full color range, very choice.

P. bulleyana, lovely orange buds and yellow flowers.

P. cockburniana, tiny candelabra, fiery crimson-orange.

P. japonica Etal Hybrids, a new strain of exceptional vigor, in pink.

P. florindae, a giant to 4 feet, drooping yellow bells in large heads.

as it develops and one who has undertaken to experiment with hybridizing has surely discovered the Fountain of Youth.

Walter Welch.
November 5, 1948.

P. japonica, Postford White, the best white *primula*, scarce and in great demand.

P. aurantiaca hybrids, a new strain of candelabras, rather dwarf and particularly fine color range.

The following are some of the rare *Meconopsis*:

M. quintuplinervia, Farrer's beloved "Harebell Poppy", dwarf, a true perennial, soft blue, rare in seed.

M. napaulensis (Red Form), most remarkable, about 50% soft tomato-red, VERY rare.

M. integrifolia, immense soft yellow flowers.

M. betonicifolia, one of the best Blue Poppies.

M. paniculata, yellow.

M. simplicifolia, blue-red form.

M. paniculata, especially fine form with gray rosettes, yellow flowers.

We wish customers would take more interest in the growing of Iris from seed; there is a great field in this genus with "finds" for even the rank amateur. Note especially the large list we are offering, no where else can you find such a collection of Iris in seeds.

Three outstanding forms are in the Drake seeds:

Iris forrestii hybrids, especially fine things can be expected from these.

I. chrysographes rubella, very fine, dwarf crimson, RARE.

I. chrysographes x *tenax*, the parent is enormous-flowered, blue-black, heavily pencilled with gold; seedlings should be very good.

All the above will be found listed in their place in catalog. In some cases the amount of seed is small.

The Lovely Clematis

There is no more beautiful vine, and none more generous with its flowers, than the *Clematis*, yet with the exception of one or two of the least impressive species, they are still very little grown in this country. Perhaps the reason is that they have acquired a totally undeserved reputation for difficulty, which seems in part due to poor plants sent out by nurseries in the past.

Various prescriptions for their proper treatment have been suggested but the main requirement seems to be rich soil, preferably, but not necessarily limy, and some shade at the base of the plant. Grown on north walls here — the last place anyone would think of growing them, visitors tell me — the large - flowered hybrids have proved thoroughly hardy without protection other than a little manure as winter mulch, and have flowered intermittently throughout the summer, after their first glorious display.

Clematis may be grown from seed if only a little patience is used. While a few species, especially the yellow - flowered ones, will germinate in a few weeks, most require a full year before any growth shows. Once the seedlings appear, top growth is very rapid, and flowers can be expected in a season or two. Home-grown seedlings are much more likely to thrive than nursery plants, which may be grafted, and for anyone slightly experienced in growing plants from seed, there is always great satisfaction in starting such rare things.

There is quite a wide range of beautiful species of which seed can be had from time to time, ranging from dwarf herbaceous bushes to enormous woody vines. The large-flowered hybrids, usually listed as *Jackmannii* hybrids, are not always obtainable in seed, and catalogs should be watched from year to year for a listing of them. These are, of course, the glories of the race, yet their beauty should not make one ignore the other choice kinds.

One of the best-known is *C. montana*, a great ramper, which is especially fine tumbling over a wall or terrace, but equally good roving through a tree. The quite large flowers in tremendous quantity come in white and pink, the latter usually preferred to the white.

Somewhat similar, but even rarer, is *C. spooneri rosea*, a most beautiful thing when in bloom. It

may be damaged, however, in a very severe winter.

Smaller vines, with blue flowers, at *CC. alpina*, *columbiana*, and *macropetala*. These are often listed as *Atragene* rather than as *Clematis*, and make very modest vines, of perhaps 3 or 4 ft, which may be planted so that they will climb through a bush and add much to its attractiveness with their half - opened blue flowers. *C. macropetala* is regarded as the choicest of the lot, but is still almost unknown in this country; young seedlings of it are rather delicate and should be handled carefully.

There are several known yellow species, but whatever the name on the (English) packets, all that this gardener has raised have turned out the same, apparently *C. serratifolia*. In late summer this vine is buried in four-petalled globular flowers a couple of inches across, clear yellow, which are followed by fluffy seeds heads that are extremely ornamental. This species will grow almost anywhere in sun or shade, and will self-sow. More, it is one *clematis* that will germinate in a very few weeks from seed, and that will flower the second season. It must be whispered, though, that once established no amount of digging will eradicate it, and that it will send up suckers several feet away. This beauty is for wild rough places only, where it can wander and ramp as it pleases.

Erect herbaceous species are excellent, but little-used, in the perennial border. Most of these have tubular or urn-shaped flowers of blue, or sometimes dull purple, very "arty" in effect. Among these are *CC. douglasii* and *scottii*.

Likewise with urn-shaped flowers of pinkish-purple, but a slender climber, is *C. crispa*. This should not be grown where it is crowded, and will be at its best rambling through a low bush. *C. pitcheri* has a pun in its name, for while named after a Mr. Pitcher, the purple flowers are pitcher-shaped. This is rather a scrambling vine, which may grow as much as ten feet.

The above-mentioned are only a few of the many species and forms included among *Clematis*, all of which will add variety and novelty to the garden, and will excite the admiration of visitors. Everyone seems to know *Clematis*, yet relatively few grow them, and always get enthusiastic when a plant in flower is seen.

C. R. Worth

Johnny-Jump-Ups

Much pleasure was provided last summer by a packet of *Viola saxatilis*, Dawnside Strain. These are miniature Johnny-jump-ups, with flowers well under an inch across, in various shades of blue, usually two or more shades to a flower, borne on very dwarf plants. They show little resemblance in either flower or leaf shape to *Viola saxatilis aetolica* and are apparently a selected strain of garden hybrids.

Sowing the seed was unintentionally delayed until the end of June, and the young plants had to endure one of the hottest and driest seasons on record, with very little artificial watering. In spite of these obstacles, the first flowers appeared in less than two months, and continued in profusion till November, when a stray cow ate them down to the roots. This should have been their finish, but within a couple of weeks more flowers appeared, and the plants made such dense basal tufts that they will apparently flower in abundance again next spring. An easier and more obliging plant for border or rock garden can hardly be found.

Amateur hybridizers can have a lot of fun with this strain, the easy way. Merely by planting them ad-

South Rhodesian New Species

COREOPSIS insecta
DELPHINIUM macrocentron
CLEMATOPSIS stanleyi
FELICIA hyssopifolia
SUCCULENTS:
BRYOPHYLLUM calycinum
KALANCHOE phyllisora
—paniculata
ANEILMA aquipinocpale
BUPHONIA dispicha
EUCOMIS undulata
EULOTHIA livingstoneia
—zeyheri
GLADIOLUS melleri
—permeabuis
GLORIOSA superba gybrids
HAENAMPUS zambesiacus
HYPOXIS species
LAPEYROUSIA sandersonii

jacent to some ordinary strain of bedding violas, such as the S. & G. or W-F Special Blends, a host of self-grown babies will appear, from which selection according to taste, as to form and color, can be made. The selected plants should if possible be planted as some distance from the original bed, and by rouging over a couple of years, a very attractive strain of miniatures in just the colors and shapes one wishes can be developed.

Ordering—Important

First be sure to print your name and address. We get hundreds of letters every week of which it is impossible to make out properly.

Remit in checks, money orders or, at your risk, in cash. We did not have a single cash remittance lost last year, but it could happen. Orders amounting to 25c you can remit in 1c stamps; 25c - 50c in 3c stamps; 50c - 95c in 5c or 10c stamps, but over this amount do not send stamps, please. Michigan customers please add their 3% sales tax. Don't forget.

Orders for seeds, bulbs, plants, etc., are not mailed in one package. Seeds usually go out by return mail and are not acknowledged, but if there is any delay in shipping you will receive an acknowledgement.

On Flower Seeds there is a key-number just before the price. To save you a lot of writing just use the symbol. It is short and easy.

Lawn Seeds

We offer only the very best grades of Lawn Grasses. We suggest that you order separate grasses, when possible, rather than mixtures, as you will more likely have a more suitable stand of grass for the purpose you wish as well as for the particular soil. The mixtures that we offer from time to time, are made up especially for the season in which they are listed.

Kentucky Blue Grass

This is the most satisfactory lawn grass for the northern part of the country and should make up at least 80% of any sowing. For sowing in March, which is the best time, a 100% seeding can be made. It requires about 21 days to germinate and thus the best stands will be secured when planted early. PREPAID: Lb. 90c; 3 Lbs. \$2.50; 10 Lbs. \$8.00; 25 Lbs. \$20.00 NOT PREPAID: 112 bags at 66c per lb.

ANALYSIS: Pure Seed 92.27%; Germination 80%; Inert Matter, 7.04%; Weed Seed .87%; Crop Seed .32%, 2 Buckhorn per oz. Grown in Ky. This lot weighs better than 24 lbs. per bushel and is a very choice lot.

Lawn Red Top

Where a quick growth is wanted for a start and especially on soils that are towards the wet side, Red Top makes an excellent Lawn Grass. It is a fine grass, germinates quickly and can be sown as soon as the ground is ready in the spring. Blue grass should be sown with it for the permanent grass. Red Top has a more pleasing appearance than the Rye Grasses or Timothy, which is often used for a quick growth. PREPAID: Lb. 90c; 3 Lbs. \$2.40 5 Lbs. \$3.50; 10 Lbs. \$7.00

Dutch White Clover

White Clover gives the lawn a dark green appearance and a velvety texture. It is quick to germinate and can be sown in March, on the snow, as well as later in the spring. It is an excellent grass to plant with Blue Grass and one of its most important advantages is that it gives a green lawn during August when Blue Grass is likely to dry up during a hot dry spell. Sow about ¼-½ lbs. to the square rod on new seedings and half as much for established lawns.

PREPAID: Lb. 95c; 3 Lbs. \$2.75; 10 Lbs. \$7.35.

WE RECOMMEND for a general Lawn Grass mixture for sowing on old lawns for sowing, Blue Grass, 80%, Red Top, 15%, White Clover 5%. When ordered in 10 Lbs. lots, use the 10 Lbs. rates above for prices.

GARDEN SUPPLIES

POT STAKES

¾" wide. Prices prepaid, painted white.

Length	No. to Carton	Wt. per Carton	Price 100	Price Carton	WS per 1000
4 inch	1000	3 lbs.	50c	\$3.41	UEL
5 inch	1000	3½ lbs.	55c	\$3.59	TCS
6 inch	1000	4½ lbs.	60c	\$3.92	TLS
10 inch	500	2½ lbs.	70c	\$3.03	LTS

SPECIAL GARDEN STAKES - ¾" wide, painted white, all prices prepaid.

8 inch	250	2½ lbs.	\$1.10	\$2.28	WWS
10 inch	250	3½ lbs.	\$1.25	\$2.66	EES

SPECIAL GARDEN LABELS - 1½" wide, painted white, prepaid.

12 inch	100	2½ lbs.	—	\$1.75	CFSS
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COPPER WIRED TREE LABELS - painted white, ¾" wide, prepaid.

3½ inch	1000	3½ lbs.	50c	\$4.08	TOS
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Wholesale prices are for full cartons, none broken, and prices are NOT PREPAID; if wanted by parcel post add postage. On retail orders where above items are included in a "Not Prepaid" shipment, postage will be allowed.

VERMICULITE

((Terra-Lite Brand).)

Of special use for seed beds, for cuttings and in potting soil. All retail prices are post paid, postage will be allowed where shipped in collect shipments; wholesale prices are NOT prepaid.

4 qt. packages, ¼ lb.	48c
12 pkgs. to Paper Carton, T.US	

½ bushel package, 3 lbs.	93c
6 pkgs. to Paper Carton, T.FE	

2 bushel package, 12 lbs.	each C.FT 2.30
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Write for special folder on uses.

PLANT FLATS

Made of Southern Pine, 18" long, 11" wide, 3" deep, not nailed up. Approximate weight per flat, 4 lbs. In bundles of 25 at 23c each, FOB Lansing, Mich. Less than 25 at 25c each.

FERTO - POTS

Organic pots which can be set in ground with plants, retains moisture, adds humus and manure to the soil. 12 pots to a box. No. 2 size, 50c per box; No. 3, 75c per box; not prepaid.

Epilobium Rigidum

This is one of the most beautiful alpine plants, with large 1 inch vivid rose-pink flowers, growing in mats 4 inches high. It is found in rock crevices at 5,000 ft.

This is an exceedingly scarce item and not offered before by anyone to our knowledge.

To say nothing about the time required to first find it, it required 5 hours work to collect after climbing 5,000 feet, and then 4 hours to clean. The resulting seed weighed less than a quarter ounce. It is a plant for only the best alpine gardeners, until seed is more plentiful.

We might also mention here, that there are many listings in our catalog of seeds that are very rare and scarce and we have known of many cases where large amounts of money have been subscribed to plant collecting trips for the express purpose of finding some rare flower that we quite often offer in our list. Naturally the amount of seed is small and only a few orders usually can be filled.

A year ago we offered *Dicentra uniflora*, a very rare little Bleeding Heart and before we could withdraw the listing we had many orders with no seed. This year, after very careful search over the same territory, we were unable to locate a single seed but did find a small amount of *D. oregana*, which is more dwarf and a more showy species. This will be sent instead of *D. uniflora*. We mention this because some—not many—customers think that these rare sorts are as easily purchased as a packet of mixed Zinnias or Marigolds.

VEGETABLE SEEDS

Listed In Extra Issue
Write For Free Copy

Seeds For An English Garden

When it comes to collections of rare flowers, there is no section that can be compared to the English private gardens — and we might add here, we hope the political affairs there will not get even worse and destroy many of the valuable gardens. In many cases seeds from these gardens cannot be purchased and it is only through exchanges that we are able to secure some of the rare ones offered below, which are now on their way to the USA. We hope many of these will get into the hands of garden lovers who will grow them year after year.

These are from the well known E. B. Anderson collection, many being in rather small quantities:

Matthiola x bragginsii, rosy-lilac, sweet scented, half hardy.
M. crassifolia, red-purple, 6-8 ft., RARE.

Iris kerneriana, spuria group, pale yellow, very RARE.

Paeonia cambessedesii, miniature with enormous flowers, rare.

Penstemon scouleri alba, shrubby, white flowered, a treasure.

Edraianthus parnassicus, choice cluster-headed bell flower for the rock garden.

Aquilegia chrysantha.

Atragene mactropetala, very choice dwarf trailing Clematic blue.

Astrantia carniolica, attractive dull crimson unbellifer.

Alstroemeria lirtu x haemantha, lovely pink shades.

Allium dioscoridis, RARE, 2 ft.; note also that we offer the most complete listing of Alliums.

Incarvillea delavayi.

Cyclamen cilicium alpinum, rare hardy species.

Iris douglasiana.

Hyacinthus princeps, pale sea green bells, very rare.

Rosa x hillieri, a moyseii hybrid.

Roas x cantabrigensis, large single cream flowers.

Ross x highdownensis, brilliant red flowers, very showy red hips.

R. moyesii.

R. Harrison's Yellow.

Hypericum coria.

Speeding Up The Lilies

Many of the favorite species of Lilies, and some of the choicest hybrid strains, are so slow from seed that most amateurs feel alarmed at the thought of attempting them. If sown in late fall or early spring a tiny bulblet develops the first season, but no top growth is made until the second year.

A very simple method that has been tried by numerous amateurs in the past few years makes possible the saving of an entire year in the growth of these lilies. All that is necessary is a supply of sand (vermiculite will probably work as well) and a screw-top jar, preferably wide-mouthed, for each lot of seed.

Mix the seed with a fair amount of moist sand, place in the jar, screw on the cap, and set the jar in a warm place—the top of a kitchen cupboard is excellent. The sand must not be wet, but quite moist. If it should dry out, a small amount of water may be poured in, but never enough to show over the top of the sand. Arranging the seeds so that a few are visible from the side of the jar will enable one to watch progress.

In anywhere from one month to six, depending largely on the freshness of the seeds, tiny white bulblets will appear at the base of the seeds. These should be left in the jar until they are about as large as a grain of wheat. Then the jars may be set in a refrigerator for about a month, to give the period of cool weather necessary to induce top growth.

However, if temperatures of 60 or below can be expected for several weeks, the bulblets may be moved directly to pots of soil. This moving should be done carefully, with the bulblets inserted too (the pointed end) uppermost, and covered with about one-half inch of soil. In a few weeks top growth will start, and the bulblets can then be handled as ordinary seedlings. There are reports that the babies have put out sizeable leaves while still in the refrigerator.

Of course no lily seeds marked "A", those which germinate in a few weeks and put out a leaf immediately, will profit from this treatment, and as these species do not form bulbs for some time, they are very difficult to handle by this method.

The sand treatment has been tried on many species, and has worked with uniform success on *Lilium auratum*, *L. speciosum*, *L. szovitzianum*, and *L. martagon* and its assorted hybrids. It has failed completely with western American species, but the fault there may have been in the seeds themselves. The westerners are tricky, and seedlings are now (December) appearing above ground from spring-sown seed; apparently no bulblets have yet been formed.

Lilium x Dalhansonii.
L. x Marhan.
Anomatheca cruenta.
Paeonia willmottiae hybrid, nearly pure white, choice.
Tulipa sprengeri, very attractive.

Fritillaria imperialis rubra maxima, giant red-flowered Crown Imperial.

Moraea, sp. aff. *huttoni*, fairly hardy Irid with large cream flowers, RARE. There are no *Iris* found in the S. Hemisphere and the *Moraeas* are the nearest they have to our *Iris*.

Fritillaria gracilis.

Ramondia myconi, Montserrat Form, giant form, lovely hardy resneraceous plant, RARE.

Linaria macedonica major.

Armeria formosa.

Anacardus atlanticus, rare and choice dwarf daisy.

Codonopsis vineiflora, very rare bellflower with periwinkle blueaucers, climbing.

Anemone slavica, very rare dwarf pulsatilla, especially fine.

Helleborus lentus.

Colchicum decafleri, very rare miniature, fall blooming.

Iris vicaria, white and blue, rare.

uno Iris.

Clematis campaniflora, small purple bells, uncommon.

Anemone halleri, deep purple pulsatilla type.

Viburnum, lovely rare shrub.

Mr. Anderson is president of the Alpine Garden Society of England.